BEES FROM EAST GIPPSLAND.

By TARLTON RAYMENT.

Mr J. Clark, of the National Museum, Melbourne, has been kind enough to allow me the privilege of studying the bees that he collected when visiting East Gippsland. All of the honey-gatherers were working on the flowers of a *Leptospermum*. I was not at all surprised to find that the species varied from the type-forms, because the flora of the extreme eastern end of the State is peculiar, and the climatic conditions are, in some ways, unique. The Red-bees, of the genus *Binghamiella*, are so dark that I feel justified in referring them to a new variety. The *Halictus*, the *Parasphecodes* and the *Gnathoprosopis* are new.

DIVISION COLLETIFORMES.

Family Prosopididae.

BINGHAMIELLA ANTIPODES (Smith), variety *nigra*, n. var.

This form is slightly smaller than Smith's type, and though the remarkable sculpturing of the metathorax presents no structural differences, the red of the abdomen is indefinite. The first segment is jet-black and highly polished, and the other segments are so strongly suffused with black that the red is very obscure. Moreover, the wings, too, are much more strongly coloured with the purplish-black iridescence. Specimens of this genus from Croydon, Ringwood, Ferntree Gully and Kiata have a clear-red abdomen, with only portion of the first segment showing any black, but these Cann River females are dark enough to be called *nigra*. A specimen from West Australia (Forst) has no black on the abdomen. Type in National Museum, Melbourne.

GNATHOPROSOPIS NIGRITARSUS, n. sp.

Female.—Length, 6mm. approx. Head Black, ordinary. Face-marks lemon-yellow, pointed below, wavy truncate at insertion of antennae; frons closely and finely punctured, dull; clypeus punctured, but not so closely as frons; supra-clypeal area similar to front; vertex with wine-pink ocelli; compound eyes claret-brown, slightly converging below; genae with fine striation; labrum black; mandibulae truncate, bidentate, blackish-brown; antennae submoniliform, scape black, slightly dilated, flagellum black above, ferruginous beneath. Prothorax swollen laterally, lemon-yellow, except fine black interruption at middle. Tubercles bright lemon-yellow. Mesothorax dull, black; finely and closely punctured; minute lines joining the punctures. Scutellum similar to mesothorax. Postscutellum similar to mesothorax. Metathorax black, bright, with rugae, partly radiating, of medium size. Ab-

domen: dorsal segments black, bright, closely punctured, but not so close as on mesothorax; ventral segments black, with a few short stiff white hairs. Legs black, with a few short stiff white hairs. Tarsi black, anterior and middle with fulvous hairs; claws blackish-red; hind calcariae pale, finely serrated. Tegulae black, bright, with the sculpture of the mesothorax. Wings hyaline iridescent; nervures blackish-brown, basal arched, just short of nervulus, second intercubitus bent; cells: radial large, second cubital receiving second recurrent at apical third; pterostigma large, blackish-brown; hamuli five, of weak development.

Locality, Cann River, Gippsland, Victoria. Date, November, 1928.

Biological data: On flowers of a *Leptospermum*. I have a specimen from flowers of *Eucalyptus calophylla*, at Sandringham. This bee has a minute creamy spot at the base of the tibia, and lacks the fulvous hair of the tarsi. It may be regarded as variety *maculata*.

There is a large group of Australian bees, about 6mm. in length, with a bright yellow collar on prothorax, yellow face-marks and tubercles, and with yellow on the legs.

Gnathoprosopis hackeri, Ckll., has scapes with a reddish stripe; yellow on legs, and light markings on posterior tibiae. *Gnathoprosopis nigritarsus*, Raym., legs entirely black, the tegulae black. *Gnathoprosopis nigritarsus* var. *maculata*, Raym., yellow on legs confined to a creamy spot at base of tibia.

DIVISION ANDRENIFORMES.

Family Andrenidae. Subfamily Halictinae.

HALICTUS ELLIOTTI, n. sp.

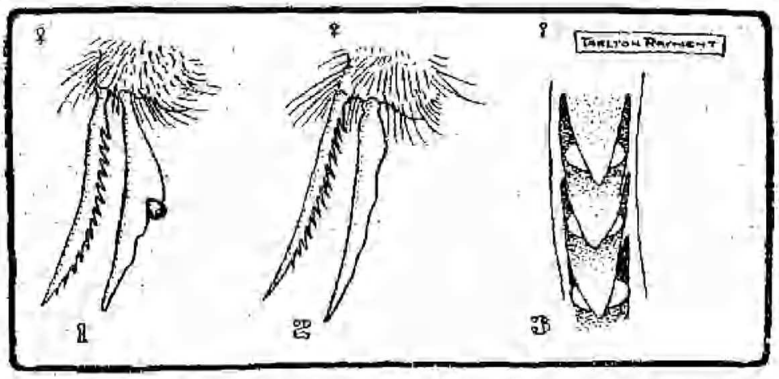
Female.—Length, 8.5mm. approx. Face-marks nil; frons coarsely punctured, a few scattered white hairs. Clypeus prominent, coarsely punctured. Supraclypeal area coarsely punctured, bright, a few white hairs. Vertex with clear glassy ocelli. Compound eyes claret-brown. Genae punctured, a few white hairs; labrum black; mandibulae black, with obscure rufous patch; antennae black, submoniliform. Prothorax not visible from above; tubercles black, a fringe of pale hair. Mesothorax black, coarsely and densely punctured, a few white hairs surround the thorax; scutellum bi-gibbous; post-scutellum with a light covering of fulvous hair. Metathorax with a large, crescent-shaped area, with coarse anastomosing rugae diminishing at sides of truncation. Abdomen: dorsal segments shining, hind margins very narrowly reddish, third with a shining narrow band of cinereous pubescence, a patch

of similar hair at sides of second; ventral segments have a fringe of white hair. Legs black, with white hair, except the fulvous hair of the tibiae; tarsi with light fulvous hair; claws pale reddish. Hind calcariae pale yellowish, with no defined teeth, but has a wide wavy edge. Tegulae dark amber. Wings hyaline; nervures dark amber; cells normal for *Halictus;* pterostigma dark amber. Hamuli of moderate development.

Locality, Cann River, Gippsland. Date, November, 1928.

Biological data. Captured on flowers of a *Leptospermum.* At the request of Mr. J. Clark, I have dedicated the species to Senator R. D. Elliott.

This species is close to *H. lanarius*, Smith, and *H. lanuginosus.* Comparing it with a specimen of the former species determined by Prof. Cockerell, *H. elliotii* is blacker, since it is less hairy; there is not any fulvous or light hair about the



1. Calcariae of *Halictus lanarius* SMITH, with pebble wedged by tooth.
2. Calcariae of *Halictus elliottii* RAYMENT.
3. Fine serrations highly magnified to show position of pollen-granules.

rima; the margins of the segments are much more narrowly reddish; lunar area of metathorax much better defined; tegulae lighter; pterostigma darker; anastomosing rugae of *H. elliotii* diminishes at sides, that of *H. lanarius* is coarse throughout. The hind spur of *H. lanarius* has one prominent rounded tooth, and a wavy edge diminishing to the point; tarsi darker.

On many specimens of bees I have noted the fine serrations holding pollen-granules, and, since a minute examination reveals some relationship between the diameter of the granules and the size of the teeth, I suggest that one of the

spurs is used on the floral pollen-sacs. The coarse teeth of the other spur are undoubtedly used for excavating soil, and I often find small pebbles wedged tightly between the tooth and the spur. True excavators of earth have coarse teeth on one spur, but those using shafts or cells made by others, have fine serrations on both calcariae. The honey-bee, *Apis*, has lost even the serrations, and has only a simple smooth peg; of course, she has no digging to do. Male bees do not excavate, and none has the coarse teeth on the calcariae.

Family Andrenidae. Subfamily Halictinae.

PARASPHECODES HIRTIVENTRIS, Cockerell.

The type collected by Turner was described from Ararat, Victoria, and the Cann River specimen is not quite typical, and perhaps is an eastern race.

PARASPHECODES RUFITARSUS, n. sp.

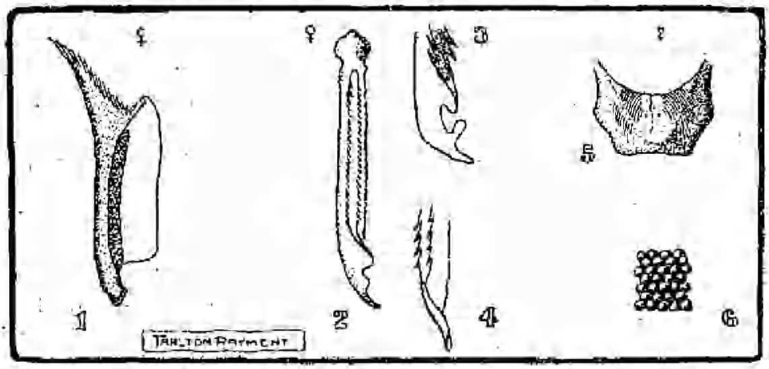
Female.—Length, 11mm. approx. Head black, bright, facial quadrangle wider than long; face-marks nil; a fine carina reaches more than half-way to median ocellus; frons shining, coarsely and densely punctured, a few fulvous hairs radiating from bases of antennae; clypeus shining, prominent, coarsely but sparsely punctured, a fringe of golden hair on anterior edge; supraclypeal area prominent, shining, coarsely but sparsely punctured; vertex with numerous finer punctures, a few fulvous hairs; compound eyes blackish, slightly converging below; genae slightly aeneas, well punctured, a few long whitish hairs; labrum black; mandibulae black, and strongly bent; antennae submoniliform, dark reddish, scape lighter at base and apex. Prothorax is prominent, with a lunate thick tuft of deep cream hair; mesothorax black, bright, well punctured, a few short fulvous hairs; scutellum sculptured and coloured like mesothorax; postscutellum rough, black, covered with a scale-like pattern on which is superimposed a striate sculpture too fine to be called rugae. Abdomen: dorsal segments, black, bright, well punctured, numerous short, appressed black hairs, a few longer fulvous hairs at sides, a few short creamy hairs at hind margin of second; rima, a bare reddish furrow; ventral segments black, a light fringe of long white hair on margins. Legs red, anterior femora and all coxae black, apical ends of median and hind femora darker anteriorly, with black hair, otherwise the hair is pale. Tarsi dark red, with fulvous hair. Claws blackish-red, pulvilli large. Hind calcariae reddish-amber, with three short noduliform teeth at apical end, of a form nearer to *Nomia* than *Halictus*. Tegulae clear ferruginous. Wings dark, reddish-brown, carrying much fine black hair;

nervures reddish-black, basal, like fish-hook curve, just short of nervulus, first and second recurrents entering the cubital cells just short of the second and third intercubitus; cells: radial large, radius nervure rounded on costa, second cubital cell narrowed at top. Pterostigma large, obscure reddish-brown. Hamuli thirteen in number, strongly developed.

Locality, Cann River, Gippsland, Victoria. Date, November, 1928.

Allies: the smaller *P. plorator*, Ckll., has black legs, and the sculpture of the face is quite different. The spurs lack the coarse teeth. *Halictus franki*, Friese, also has some affinity, but the first recurrent nervure meets the second intercubitus. *H. littleri*, Ckll., has white pubescence at bases of second and third tergites.

Biological data. This female was collected from flowers of



1. Antenna-cleaner of female *Parasphecodes rufitarsus* RAYMENT. Note the long, spined malus of Halictine form.
2. Hind spur or Calcaria shows some affinity to *Nomia*. The noduli-form teeth at tip are not typical of *Halictus*.
3. A lacteral view of the apical end of spur.
4. Another view to show the twist of the end.
5. Metathorax showing position of the Striae-superimposed on a fine sculpture.
6. The peculiar scale-like pattern of the integument highly magnified.

a Leptospermum, and the species is on the border line of *Halictus* and *Parasphecodes;* owing to the structure of the metathorax and the calcariae, I have added it to the latter genus. Type in Melbourne Museum.

Family Andrenidae. Subfamily Nomiinae.

NOMIA GRACILIPES, Smith.

This species has been recorded from Victoria, South Australia, and Queensland, but I suspect there are plenty in New South Wales, since Mr. Clark's locality is close to the border. The specimens from the Cann River have more hair, and are slightly larger than those recorded in the original

description; the hair of the legs being lighter than that on specimens identified by Prof. Cockerell.

DIVISION XYLOCOPIFORMES.

Family Ceratinidae.

EXONEURA HAMULATA, Cockerell.

Previously recorded from Queensland, where it was collected by Mr. Hacker. The Cann River females are typical, with the exception of a triangular black patch on first segment, and since there is some variation in this colour patch, I do not attach any importance to it.

EXONEURA CONCINNULA, Cockerell.

Previously recorded from New South Wales. Both these bees are now added to the Victorian fauna.

Nota bene: The specific descriptions have been systematised, and I shall use this form for all future work. The nomenclature of the cells and nervures of the wings is based on the arbitrary method of Rohwer and Gahan (1916). Systems based on homologies with the veins in other orders are too cumbersome for use in taxonomy.

DR. J. A. LEACH.

The late Dr. J. A. Leach was elected a member of the Club in December, 1902. Four years later he was elected to the committee, and later was one of the vice-presidents, becoming president in June, 1913. However, finding his departmental duties called him so much away from Melbourne, he resigned the position after only two months occupancy, Mr. J. A. Kershaw being elected to fill the vacancy. In March, 1904, he read a paper concerning the finding of the Anopheles mosquito in Victoria. This form helps to spread the malarial fever of the tropics, but, fortunately, up to the present, it seems to have had no effect on the health of Victoria.

In December, 1906, Dr. Leach took the principal part in the organisation and management of a camp-out at Mornington, where some 30 members of the Club were joined by about 50 school teachers. Anxious to improve their knowledge of nature study, they lived under canvas for about ten days of their Christmas holidays. It was a most successful gathering, and its doings are fully detailed in the *Victorian Naturalist* (March, 1907, Vol. XXIII., p. 185).

Dr. Leach's principal study, however, was native bird-life, and in July, 1909, a "Descriptive List of the Birds of Victoria," from his pen, was issued by the Education Department of Victoria. In 1910 he gave an illustrated lecture on the Birds of Victoria (*Victorian Naturalist*, Vol. XXVII., p. 143), which was later expanded into that well-known volume, "An Australian Bird Book (1911), in which every Victorian bird was illustrated. This contained 20 colored plates. The book was at once a great success, and has passed through seven editions. Again, the Education Department gave considerable help in the production. In 1922 Dr. Leach placed before nature lovers "Australian Nature Studies," a volume of 500 pages, with a large number of illustrations and diagrams. For a reference to its contents see *Victorian Naturalist*, Vol. XXXIX., p. 96. Later he found increasing duties necessitated the relinquishment of his membership, but at the time of his death he was again a member, and had recently attended some of the monthly meetings.